



Third West Weekly Report Shepherd, Michael

to:

Joyce Ackerman, 'Craig Bamitz (cbamitz@utah.gov)' 10/12/2011 01:31 PM

**Hide Details** 

From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Bamitz (cbamitz@utah.gov)" <cbamitz@utah.gov>

#### 7 Attachments









Weekly Reports 10-03-11 to 10-07-11.pdf Third West Weekly Log 2011-40.pdf 221950-1.pdf 222038-1.pdf







222194-1.pdf 222199-1.pdf 222296-1.pdf

Joyce & Craig,

Attached are the reports for the week of October 3, 2011.

All air monitoring results came back negative. Please let me know if you have any questions.

Thanks,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
801.220.4584 Office
801.631.1310 Cell
801.220.2797 Fax
michael.shepherd@pacificorp.com



October 11, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 222199-1 None Given

Project Description:

Rocky Mtn. Power 3rd

West Substation

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222199-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

**President** 

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE L TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222199-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Ciient Project Description:** 

Rocky Mtn. Power 3rd West Substation

**Date Samples Received:** 

October 10, 2011

Analysis Type:

**TEM, AHERA** 

Turnaround:

6 Hour

Date Samples Analyzed:

October 10, 2011

Client ID Number	Lab ID Number	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
		(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
10-6-S	EM 807742	0.1100	668	ND	0.0052	BAS	BAS
10-6- <b>W</b>	EM 807743	0.1100	668	ND	0.0052	BAS	BAS
10-6-E	EM 807744	0.1100	668	ND	0.0052	BAS	BAS
10-6-N	EM 807745	0.1100	668	ND	0.0052	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm<sup>2</sup> = 0.011 Effective Filter Area = 385 sq mm



Project: 3rd West Sub Station		<b>D</b> ate: 10/3/11						
Location:	3rd West, 1st South, SLC	Job Number:						
Survey Cond	ucted By: <u>lustin Kargis</u>	Title:						
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and			
Standard	Title				<b>D</b> ate			
1926.59	Hazard Communication <b>P</b> rogram, List of Chemicals, Training, MSDSs.			x	·			
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х				
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			x				
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x				
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x				
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x						

Standard	Title  Excavation protective systems; examination by	In Compliance	Out of Compliance	x N/A	Corrective Action Taken and Date
1926.652 (a) (1)	competent person when less than 5 feet in depth.		·		
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.	-		x .	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) · (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				<b>Da</b> te
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	(
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			•
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.		,	x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			х	
1926.150 (c)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.			х	·
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	·

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.		_	x	
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	İ		x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tool is double insulated.			х	
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title	$\Box$	$\Box$	□	Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	·
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

#### **Comments:**

AM meeting with Scott Collard with Robert Schmidt from PEG development. PEG asked for copies of sampling results and other reports pertaining to site work.

9:30 - excavation begins in EZ, Miller has 4 trucks with pups in parking lot. Had to wait a while to get poly to wrap beds. Air monitoring started.

10:30 - Truck #92 washed and departed

10:45 - Brian King and Robert Hamilton on site to check on operations.

Newman delivered another track hoe with hammer for concrete demolition in EZ.

11:20 - Truck #93 washed and departed

12:15 - Truck #91 washed and departed

12:55 - Truck #99 washed and departed

13:30-16:00 some excavation but mostly down time waiting for trucks to return

16:00 - Trucks #92, 93 return, have to wait for poly to wrap beds.

17:00 - Truck #93 washed and departed

17:45 - Truck #92 wahed and departed.

<u>The last two loads (93 & 92) were held at Miller Paving overnight in anticipation of delivering loads to Clean Harbors site 10/4 am.</u>





## 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

#### DAILY CHECKLIST

	DAILY CHECKLIST
DATE:	10/3/11
Comoral	
<u>General</u> ☑	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
INA	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NADocu	ment required Respirator Training completion with Form H
Ø	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
Conf	irm retum of waste material manifest documents for each load with site manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
_ NA	Combined Space Entry Permit From F
Ø	Exclusion zone operations are practiced as instructed.
<b>Ø</b>	Decontamination unit is working properly.
☑	Workers are using decontamination unit as instructed.
$\square$	Workers use personal protective equipment properly.
Ø	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
$\square$	Observe control measures for dust and fugitive materials i.e. watering excavation sites and
	track out prevention.
	Review sign-in/sign-out log throughout and at the end of the workday.
$\square$	Secure the site at the end of the workday
Samplin	g g
NA Soil (	Confirmation sampling for any newly excavated areas
	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
-	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	removal
NA	Digitally photograph each sample location and at any place field sampling personnel
	determined necessary
	Electronically file photo files into the on-site database





ablaComplete Field Documentation ablaField Sample Data Sheets (FSDS) ablaLogbook NAOn-site computer database ablaLabel each sample media with a unique number ☑. Seal sample(s) in zip lock plastic bags Complete and include Chain of Custody (COC) Form required for shipping of samples to NA appropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental  $\sqrt{\phantom{a}}$ Samples Review and disseminate sample results as received from the laboratories to Project NAManager and other appropriate managers and employees NA Electronically file sample reports into on-site database



Project: 3rd West Sub Station		Date: 10/4/11						
Location:	3 <sup>rd</sup> West, 1 <sup>st</sup> South, SLC	LC Job N						
Survey Conducted By: <u>lustin Kargis</u>			Title:					
		In Compliance	Out of Compliance	→ W/A	Corrective Action Taken and			
Standard_	Title				Date			
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x				
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x				
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			x				
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x				
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x .				
1024 100 (a)	Head protection, where there is a possible	x						

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.		,	х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x .	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	,		x	

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			In Compliance	Out of Compliance	N/A	Corrective Action Taken and
	Standard	Title				Date
	1926.451 (a) (4)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
	1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
	1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
	1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.	·		x	
	1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
	1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
	1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			x	·
	1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			<b>x</b>	
	1926.102 (a) (1)	Eye and face protection shall be provided.	x			
,	1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.			x	
)	1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.			х	
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			х	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	·
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tooi is double insulated.			х	
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title .				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x .			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	·
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

#### Comments:

8:40 - Truck #99 washed and departed

9:20 - Truck #91 washed and departed

13:05 - Truck #93 washed and departed

13:45 - Truck #92 washed and departed

17:15 - Truck #91 washed and departed

Noticed workers exiting exclusion zone while suited up to open and close both north and south gates. Will follow up with RMP and CVE to discuss options to help suited workers stay inside EZ.

Other items to discuss with RMP pertaining to EZ procedures.





# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

## DAILY CHECKLIST

DAŢE:		10/4/11
Ger	<u>ieral</u>	
<u>30.</u>	Clui	Work area Health and Safety Inspection
NA		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
1 11 1		activities for the day
NA		Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
		to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA		Site hazard and safety instruction for all first time employees, contractors or visitors
NA		Complete Employee Meeting Record Form B (where applicable
	Docun	nent required Respirator Training completion with Form H
☑		Record times and numbers of dump trucks and trailers as they leave the site with
		contaminated material.
	Confir	m retum of waste material manifest documents for each load with site manager.
NA		Complete all CSHASP Forms (for applicable activities planned for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
		Exclusion zone operations are practiced as instructed.
	Ø	Decontamination unit is working properly.
	<b></b> ✓	Workers are using decontamination unit as instructed.
		Workers use personal protective equipment properly.
	_	workers also personal protective equipment property.
		Set air samples at cardinal compass points around exclusion zone. Check
		throughout the day to ensure proper operation.
		Observe control measures for dust and fugitive materials i.e. watering excavafion sites and
		track out prevention.
		Review sign-in/sign-out log throughout and at the end of the workday.
		Secure the site at the end of the workday
<u>San</u>	<u>ipling</u>	
NA		Soil Confirmation sampling for any newly excavated areas
$\square$		Stationary Air Monitoring during contaminated soil removal around the perimeter of the
		exclusions zone
NA		Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
		removal
NA		Digitally photograph each sample location and at any place field sampling personnel
		determined necessary
		Electronically file photo files into the on-site database





ablaComplete Field Documentation Field Sample Data Sheets (FSDS) ablaablaLogbook NA On-site computer database ablaLabel each sample media with a unique number ablaSeal sample(s) in zip lock plastic bags ablaComplete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory  $\sqrt{\phantom{a}}$ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees Electronically file sample reports into on-site database NA



Project: 3 <sup>rd</sup> West Sub Station		Date: <u>10/5/11</u>					
Location:	3 <sup>rd</sup> West, 1 <sup>st</sup> South, SLC	Job Number:					
Survey Conducted By: <u>Justin Kargis</u>			Ti	itle: _			
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and		
Standard	Title				Date		
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x			
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х			
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x			
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x			
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x					

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title			□	Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	·
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			x	

•		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title Title			$\Box$	Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			·
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.		•	х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			х	
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.			х	
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title	□			Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.			х	
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	•
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	,
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tool is double insulated.			х	
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.	-		X	· .

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title		$\Box$		Date
1926.451 (a).	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

#### Comments:

9:15 - truck #93 washed and departed

10:02 - Truck #92 washed and departed

11:05 - Truck #99 washed and departed

13:00 - Truck #91 Washed and departed

14:40 - truck #93 washed and departed

15:30 - Truck #92 washed and departed

116:40 - Truck #99 washed and departed





## 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## **HEALTH SAFETY MANAGER (HSM)**

### DAILY CHECKLIST

	DAIL I CHECKLIST
DATE:	10/5/11
General	
<u> </u>	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NADocu	ment required Respirator Training completion with Form H
Ø	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
	rm return of waste material manifest documents for each load with site manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
_ NA	Combined Space Entry Permit From F
	Exclusion zone operations are practiced as instructed.
$\square$	Decontamination unit is working properly.
$\overline{\square}$	Workers are using decontamination unit as instructed.
	Workers use personal protective equipment properly.
$\square$	Set air samples at cardinal compass points around exclusion zone. Check
<b>[3</b> ]	throughout the day to ensure proper operation.
<b>☑</b> 	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
<b>☑</b> ☑	Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
<u>Sampling</u>	g
NA	Soil Confirmation sampling for any newly excavated areas
	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
D.T.A.	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary
NA .	Electronically file photo files into the on-site database





ablaComplete Field Documentation ablaField Sample Data Sheets (FSDS) ablaLogbook NA On-site computer database  $\square$ Label each sample media with a unique number Seal sample(s) in zip lock plastic bags Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees NA Electronically file sample reports into on-site database



Project: 3rd West Sub Station		Date: <u>10/6/11</u>					
Location:	3rd West, 1st South, SLC		Job Number:				
Survey Conducted By: <u>lustin Kargis</u>			Ti	it <b>1e:</b> _			
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and		
Standard	Title		-□	$\Box$	D <b>a</b> te		
1926.59	Hazard Communication <b>P</b> rogram, List of Chemicals, Training, MSDSs.			x			
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x			
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x			
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x			
	Head protection, where there is a possible	x					

1926.100 (a)

danger of head injury.

,		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title		·		Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			X	•
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	<b>x</b> .			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.		,	x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			<b>x</b>	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	·
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	·
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			x	
1926.150 (c)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b)	Guards for power tools shall be used and moving parts of equipment shall be guarded.			x	
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.			<b>x</b>	
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tool is double insulated.			x	
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

	-	In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title			$\Box$	Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	·
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

### Comments:

9:40 - Truck #91 washed and departed

10:25 - Truck #93 washed and departed





## 3<sup>RR</sup> WEST SUBSTATION REMEDIATION PROJECT **HEALTH SAFETY MANAGER (HSM)**

		DAILY CHECKLIST
ATE	:	10/6/11
Ge	neral	
$\overline{\mathbf{Z}}$	<u> </u>	Work area Health and Safety Inspection
NA		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	-	activities for the day
NA		Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	<b>L</b>	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	<b>\</b>	Complete Employee Meefing Record Form B (where applicable
NA	Docur	ment required Respirator Training completion with Form H
$\square$		Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
	Confi	rm return of waste material manifest documents for each load with site manager.
NA		Complete all CSHASP Forms (for applicable activities planned for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
	. •	Exclusion zone operations are practiced as instructed.
	$\overline{\mathbf{v}}$	Decontamination unit is working properly.
	$   \overline{\mathbf{A}} $	Workers are using decontamination unit as instructed.
	$\overline{\mathbf{A}}$	Workers use personal protective equipment properly.
		Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
$\square$		Observe control measures for dust and fugifive materials i.e. watering excavation sites and track out prevention.
$\overline{\mathbf{V}}$		Review sign-in/sign-out log throughout and at the end of the workday.
		Secure the site at the end of the workday
Sai	mpling	
NA		Soil Confirmation sampling for any newly excavated areas
		Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusions zone
NA	<b>\</b>	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	<b>\</b>	Digitally photograph each sample location and at any place field sampling personnel determined necessary
NA		Electronically file photo files into the on-site database





 $\square$ Complete Field Documentation Field Sample Data Sheets (FSDS)  $\square$  $\mathbf{V}$ Logbook NA On-site computer database  $\mathbf{V}$ Label each sample media with a unique number  $\mathbf{V}$ Seal sample(s) in zip lock plastic bags  $\mathbf{V}$ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental  $\square$ Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees NA Electronically file sample reports into on-site database



Project: 3rd West Sub Station  Location: 3rd West, 1st South, SLC  Survey Conducted By: Justin Kargis		Date: 10/7/11  Job Number:  Title:										
							•		In Compliance	Out of Compliance	N/A	Correct <i>iv</i> e Action Taken and
							Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x								
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x								
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			x								
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x								
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			х								
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x										

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	,
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.	1		X	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	·
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			x	
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.			x	
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

					·
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.			х	
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	·
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	•
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tool is double insulated.			x	
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Da te
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.	_		x	٠.

#### Comments:

Work in exclusion zone finished around 11:30 Newman covered sloped areas of excavation with clean fill. Covered stockpiles of contaminated material with poly. Due to recent heavy rains, all material is very wet.

Discussed with Brad (CVE) Russ, Craig (R&R) options for helping suited workers observe EZ and PPE protocols. Radios, air-horns suggested to help with communication with support zone.

Loads of back fill for excavated area delivered to yard.

Pulled samples a few minutes before 3pm.

Newman finishes at 3:00





# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## **HEALTH SAFETY MANAGER (HSM)**

### **DAILY CHECKLIST**

DATE:	10/7/11
<u>General</u>	
<u> </u>	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meefing Record Form B (where applicable
	nent required Respirator Training completion with Form H
Ø	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
	m return of waste material manifest documents for each load with site manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA NA	Combined Space Entry Permit From F
◩	Exclusion zone operations are practiced as instructed.
	Decontamination unit is working properly.
	Workers are using decontamination unit as instructed.
☑	Workers use personal protective equipment properly.
Ø	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
$\overline{\mathbf{Q}}$	Observe control measures for dust and fingifive materials i.e. watering excavation sites and
	track out prevention.
$\square$	Review sign-in/sign-out log throughout and at the end of the workday.
	Secure the site at the end of the workday
<u>Sampling</u>	
NA	Soil Confirmation sampling for any newly excavated areas
$\square$	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
<del></del>	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	removal
NA	Digitally photograph each sample location and at any place field sampling personnel
•	detennined necessary
NA	Electronically file photo files into the on-site database

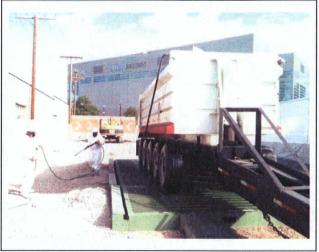




 $\checkmark$ Complete Field Documentation Field Sample Data Sheets (FSDS) ablaLogbook  $\sqrt{\phantom{a}}$ On-site computer database NA Label each sample media with a unique number  $\overline{\mathbf{Q}}$ Seal sample(s) in zip lock plastic bags ablaComplete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees Electronically file sample reports into on-site database NA



РНОТО 1



РНОТО 2



РНОТО 3

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE: 10/3/2011	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR
DRAWN BY: JMK	DATE: 10/4/2011	FILE:

SITE PHOTOGRAPHS









РНОТО 2

R & Renvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE: 10/6/2011	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY: SCALE:		REVIEWED BY: DCR						
DRAWN BY: JMK	DATE: 10/7/2011	FILE:	1					

SITE PHOTOGRAPHS



#### PACIFICORP OPERATIONS - Field Construction Representative Daily Log Third West Sub - Rebuild Monday, October 3, 2011 PROJECT NAME: DATE: PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Tot Hrs mns: Crew Start Time: 6:50 Crew Stop Time: 18:**0**0 16:30 FCR Start Time: 6:50 FCR Stop Time: Tot Hrs mns: Use military time format 00:00 **WEATHER CONDITIONS:** Sunny - 80 degrees DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. Trucks, four each, from Clean Harbors were here at 7:00. Scott Collard met with Robert Schmidt with PEG Development and discussed the issues with using the parking lot for ingress and egress from the construction site. PEC will be sending the draft for the agreement to CVE and CVE will forward to RMP. PEG has requested that copies of our R&R reports be sent to them. Newman started loading the first truck/pup (M92) at 9:30, departed at 10:30. Part of the holdup was that the trucks did not come equipped with visqueen for covering the loads. Visqueen arrived at about 8:45. Second truck/pup (M93) started loading at 10:40, departed at 11:45 Third truck/pup (M91) started loading at 11:45, departed at 12:15. Fourth truck/pup started loading at 12:15, departed at 1:00. Robert Hamilton and Brian King, RMP Environmental stopped by in the AM and witnessed several of the trucks being loaded out. Newman delivered a second trackhoe w/pavement breaker and started breaking up the concrete duct bank running north and south through the building excavation. Trucks five (M92) and six showed up at 3:45 and truck five pulled in the vard to load out at 4:20 and departed the site at 5:00. Truck six (M92) pulled into load at 5:00 and departed the site at 5:45 Contractors: CVE = 1, Newman = 3, R&R=1, Clean Harbors/Miller = 4. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Barry Nielson 0730 Dispatcher logout, name and time: Al Swinski 1800 DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: Noticed that the south fence, between the sub and Utah Paperbox has been breached. Notified Seth Riding. The maintenance man for Seth Riding came to the site and repaired the fence breach and tied the tension wire to the costs. DELAYS OR LOST TIME ENCOUNTERED: EQUIPMENT (working, delivered, idle): Pickup, portable toilet, forklift, 2 dumpsters, office trailer, conex, exclusion zone conex (2), water wagon, portable wash-down structure, trackhoe, mini-ex, bobcat, power washer, water truck



OSHA Recordable Safety Incidents:

Russ Johnson

Reported by:

Time:

#### PACIFICORP OPERATIONS - Field Construction Representative Daily Log PROJECT NAME: Third West Sub - Rebuild Tuesday, October 4, 2011 DATE: PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Crew Stop Time: Crew Start Time: 6:50 18:10 Tot Hrs mns: 18:15 FCR Start Time: 6:50 Tot Hrs mns: FCR Stop Time: Use military time format 00:00 **WEATHER CONDITIONS:** Partly Cloudy, Rainy -DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. Two Clean Harbor trucks arrived at 7:00. First truck/pup (M99) pulled into the exclusion zone at 7:50 and departed site at 8:35. Second truck/pup (M91) pulled into the exclusion zone at 8:35 and departed at 9:20. Unloaded Trenwa cable trench (15 standard sections and three truck crossing sections, plastic bollards). Third truck/pup (M93) pulled into the exclusion zone at 12:15 and departed at 1:05. Fourth truck/pup (M92) pulled into the exclusion zone at 1:05 and departed at 1:45. Fifth truck/pup (M91) pulled into the exclusion zone at 4:30 and departed at 5:15. Between trucks, Newman removed concrete from duct bank running N-S along the west side of the building excavation. Contractors: CVE = 1, Newman = 3, R&R=1, Clean Harbors/Miller = 4. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Barry Nielson 0655 Dispatcher logout, name and time: Mike Spence 1815 DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: DELAYS OR LOST TIME ENCOUNTERED: The owner of the building to the NE of the substation, Artistic Printing, came over to the site today and complained about the impact our jack-hammering of with the jack-hammer, and I would assume our compaction equipment will have the same effect, from the hours of 7:30 AM until 5:00 PM, Monday through Friday. Scott Collard has been notified of this and I suspect he will be contacting you regarding a potential cost impact if we are forced to work OT to

concrete was having on his laser printer. He is very concerned about lost time and damaged production. He indicates that we should not be doing any work accomplish the work as a result of this request/mandate.

EQUIPMENT (working, delivered, idle):

Pickup, portable toilet, forklift, 2 dumpsters, office trailer, conex, exclusion zone conex (2), water wagon, portable wash-down structure, trackhoe, trackhoe w/pavement breaker, mini-ex, bobcat, power washer, water truck

OSHA Recordable Safety Incidents: Reported by: Time:



Russ Johnson

Field Construction Representative

#### PACIFICORP OPERATIONS - Field Construction Representative Daily Log Third West Sub - Rebuild Wednesday, October 5, 2011 PROJECT NAME: DATE: PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric 6:50 Crew Start Time: Crew Stop Time: 17:10 Tot Hrs mns: 10:20 17:15 6:50 10:25 FCR Start Time: FCR Stop Time: Tot Hrs mns: Use military time format 00:00 **WEATHER CONDITIONS:** Partly Cloudy, Rainy - 50 degrees DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. Two Clean Harbor trucks arrived at 7:30. First truck/pup (M93) pulled into the exclusion zone at 8:15 and departed site at 9:10. Second truck/pup (M92) pulled into the exclusion zone at 9:10 and departed at 10:00. Third truck/pup (M99) pulled into the exclusion zone at 10:15 and departed at 11:05. Fourth truck/pup (M91) pulled into the exclusion zone at 11:40 and departed at 1:00. Fifth truck/pup (M93) pulled into the exclusion zone at 1:55 and departed at 2:40. Sixth truck/pup (M92) pulled into the exclusion zone at 2:40 and departed at 3:45. Seventh truck/pup (M99) pulled into the exclusion zone at 3:45 and departed at 4:40. Between trucks, Newman continued and completed removing concrete from duct bank running N-S along the west side of the building excavation. We anticipate two trucks will be required on Thursday to complete the excavation for the control building foundation. Tom Wilding (Wilding Engl was on-site to witness the excavation. Contractors: CVE = 1, Newman = 3, R&R=1, Clean Harbors/Miller = 4, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Kim Batt 0650 Dispatcher logout, name and time: Al **S**winski 1715 DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: **DELAYS OR LOST TIME ENCOUNTERED:** The issue with the printing company may have gone away. When we contacted them this morning to see if there was a time that we could break up some concrete they indicated that after testing their work product yesterday they were not able to identify any issues related to our work. We used the concrete breaker this morning for about one hour and didn't hear anything from them today. We will be placing some compaction equipment in the excavation tomorrow and will see what happens with that activity.

EQUIPMENT (working, delivered, idle):

Pickup, portable toilet, forklift, 2 dumpsters, office trailer, conex, exclusion zone conex (2), water wagon, portable wash-down structure, trackhoe, trackhoe w/pavement breaker, mini-ex, bobcat, power washer, water truck

OSHA Recordable Safety Incidents: Reported by: Time:



Russ Johnson

Field Construction Representative

### PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME:	Third West Su	ub - Rebuild	DATE:	Thursday, Octob	er 6, 2011
PO & Work Order NO. :	3000078050	/ 10035803	MAIN CONTRA	CTOR : Cache V	alley Electric
Crew Start Time:	7:00	Crew Stop Time:	13:30	Tot Hrs mr	ns: 6:30
FCR Start Time:	6:50	FCR Stop Time:	15:30	Tot Hrs mr	ns: 8:40
Use military time format 00:0		-			
WEATHER CONDITIONS:		Rair	y - 50 degrees	· -	
DESCRIPTION: (work per	formed, general com	ments, instructions to d	ontractor. # of c	rew members ons	site.)
R&R set up four monitors. Fir pulled into the exclusion zone a allow for access by the compacall the rain. Contractors: CVE	at 9:30 an <mark>d departed</mark> site ctor a <b>nd</b> bobcat. <b>N</b> ewmal	at 9:25. <b>N</b> ewman continued need that they wouldn't	to clean the hole a try to proof roll the	nd build a ramp into	the excavation
				:	
•	•		/		
			`		
	•				
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	<u> </u>				_
IF WORKING IN ENERGIZI	ED SUBSTATION:			<u>_</u>	
Dispatcher login, name and tim		<u> </u>		•	
Dispatcher logout, name and til	me: Mike Spence 152				
DISCREPANCIES:			MMEDIATE COR	RECTIVE ACTION	TAKEN:
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Russ Johnson

### PACIFICORP OPERATIONS - Field Construction Representative Daily Log **PROJECT NAME:** Third West Sub - Rebuild Friday, October 7, 2011 DATE: 3000078050 / 10035803 PO & Work Order NO.: MAIN CONTRACTOR: Cache Valley Electric Crew Start Time: 6:50 8:25 **Crew Stop Time:** 15:15 Tot Hrs mns: 6:50 15:35 FCR Start Time: FCR Stop Time: 8:45 Tot Hrs mns: Use military time format 00:00 **WEATHER CONDITIONS:** Rainy - Partly Cloudy, 50 degrees DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. Newman is cleaning and sloping the excavation for the control building. Moving some ABC material into the hole to cover the slopes. We will leave the bottom of the hole open til Monday to see if it will dry out a bit before we start placing ABC material on top of it. Wilding has been here to witness the hole and concurs that leaving it until Monday is a good idea. Brian King and Robert Hamilton (RMP Environmental) dropped by in the AM. Newman is stockpiling some dry ABC material (four loads) on site for use in the bottom of the excavation. Met with Brent Wiggins to discuss grading issues along the south roadway. Contractors: CVE = 1, Newman 3, R&R = 1, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Manny Lujuan 0704 Dispatcher logout, name and time: Gus Montanez 1335 DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: DELAYS OR LOST TIME ENCOUNTERED: EQUIPMENT (working, delivered, idle): Pickup, portable toilet, forklift, 2 dumpsters, office trailer, conex, exclusion zone conex (2), water wagon, portable wash-down structure, trackhoe, trackhoe



OSHA Recordable Safety Incidents:

w/pavement breaker, mini-ex, bobcat, power washer, water truck, compactor

Russ Johnson

Field Construction Representative

Reported by:

Time:



October 6, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report; Project # / P.O. # RES 221950-1 None Given

Project Description:

Rocky Mtn. Power 3rd

West Sub Station

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 221950-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 221950-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

Rocky Mtn. Power 3rd West Sub Station

**Date Samples Received:** 

October 5, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 5, 2011 - October 6, 2011

Client ID Number	Lab ID N	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-93011-E	EM	805791	0.1100	694	ND	0.0050	BAS	BAS
3W-93011-S	EM	80579 <b>2</b>	0.1100	694	ND	0.0050	BAS	BAS
3W-93011-N	EM	80579 <b>3</b>	0.1100	694	ND	0.0050	BAS	BAS
3W-93011-W	EM	805794	0.1100	694	ND	0.0050	BAS	BAS
3W-100311-S	EM	805795	0.0880	950	ND	0.0046	BAS	BAS
3W-100311-W	EM	805796	0.0880	868	ND	0.0050	BAS	BAS
3W-100311-E	EM	805797	0.0880	9 <b>3</b> 9	ND	0.0047	BAS	BAS
3W-100311-N	EM	805798	0.0880	9 <b>3</b> 9	ND	0.0047	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.011

Effective Filter Area = 385 sq mm

Digitally signed by signed by Gana Vettraino Date: 2011 10.06 09.06:53 2 08/90\*

DATA QA

Due Date: 10 - 6

## FEILAB Reservairs Environmental., Inc. 5801 Lagan St. Denver, CO 80216 • Ph; 303 964-1966 • Fax 303-477-4275 • Tdl Pree : 886 RESI-ENV

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### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	C = Cluster
Cr = Crocidolite	M = Matrix
T - Tramolita	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

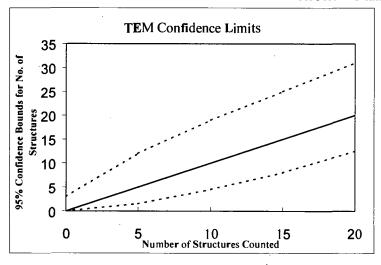
#### **Sizing Conversion**

1 length unit = 5 mm on screen = 0.278 micron 1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
instrument	JEOL 100(N)S
Voltage (KV)	100 KV
Maanilication	20KX 10KX
Grid opening area (mm2)	0.011
Scale: IL =	0.28 um
Scale: 1D=	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Rak
Sample Type (A≔Air, D≔Dust):	A
Air volume (L) or dust area (cm2)	694
Date received by lab	1015/11
Lab Job Number	221950
Lab Sample Number	805791

F-Factor Calculation (Indirect Preps (	<u> </u>
Fraction of primary filler used	• .
Total Rasuspension Volume (ml)	<del></del>
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	10/5/11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	77
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

W/ 10/0/01

Grid	Grid Opening	Structure	No. of St	ructures	Dime	enoier	Identification	Mineral Class			·	1 = yes, blank =		= no
		Туре	Primary	Total	Length	Width		Amohibole	·c	NAM	Sketch/Comments	Sketch	Photo	EDS
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3	H4-6	M				·								
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Rev 3-2009

### Reservoirs Environmental, Inc. TEM Asbestos Structura Count

Laboratonr name:	REI
Instrument	JEOL 100(N)S
Volfage tKV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scate: 1D=	0.056 um
Primary filter area	385
Secondary Fitter Area (mm2)	
QA Type	

I EMI ASDESIOS SU UCIDI A COUIT							
Client :	Rock						
Sample Type (A=Air, O=Dust):	A						
Air volume (L) or dust area (cm2)	694						
Date received by lab	10/5/11						
Lab Job Number:	221950						
Lab Sample Number:	805792						

Analyzed by	JB
Analysis date	10/5/11
Method (O=Direct, i=Indirect, IA=Indirect, ashed)	15
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used	<u> </u>				
Total Resuspension Volume (ml)					
Volume Applied to secondary filter (mf)					

Grid	Grid Opening	Structure			Dîmer	Dimensions Mentification		Dimensions Mentification Mine		Mineral Class	<del></del>			1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	.c	NAM	Sketch/Comments	Sketch	Photo	EDS		
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B	K4-3	M						Afra	m	0/5/0				,		
<u> </u>	H4-3	W							1	1						
,	K5=3	NP					<b>,</b> .	- /								
	H5-3	W														
	F6-3	ND														

### Reservoirs Environmental, inc. TEM Asbestos Struefure Count

Laboratory name:	REI
Instrument	JEOL 100(N)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: ID=	0.056 um
Primary filter area	385
Secondary Filter Area fnun2)	
QA Tyoe	

I MIT VONGOTOR OR	MOTOR COUNT
Client :	ROR
Samole Type (A=Air, D=Dusi):	A
Air volume (L) or dust area (cm2)	694
Date received by lab	10/5/11
Lab Job Number:	221950
Lab Sample Number:	805793

Analyzed by	JB
Analysis date	10/411
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	15
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only): Frection of primary filter used  Total Resuspension Volume (ml)  Volume Applied to secondary filter			
Fraction of primary filter used	1 .		
Total Rasuspension Volume (ml)			
Volume Applied to aecondary filter (mi)			

Grid	Grid Grid Opening		No. of St	ructures	Dims	nsions	Identification	Mineral Class				1 = y	es, btank	= no
		Туре	Primary	Total	Length	Width		Amphibote	.c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F3-4	du												
	E3-4	ND						0	•					
	C3-4	ND			K	40 V	7	La way	-	3	5 Lo Jehr	مزح		·
	33-4	B			. 8	4.DL	bNA	B	1					
	C4-4	S				<b>y</b> .	<b>7</b>	Han	1.0	15/11	•		•	
B	Cas 2-3	ND						/ V . l.						
	F2-3	ND					,							
	EZZ	ND												
	cz-3	W)					·	·						
	F3-10	S												·

#### Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100(N)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	ROR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	694
Date received by lab	10/5/11
Lab Job Number:	221950
Lab Sample Number:	805794

F-Factor Calculation (Indirect Prep	s Only):	
Fraction of primary litter used		٠.
Total Resuspension Volume (mi)		
Volume Applied to secondary filter (ml)		

Analyzed by	JB
Analysis date	10/5/11
Method (D=Direct, i=Indirect, IA=Indirect, ashed)	5
Counting rules (ISO, AHERA, ASTM)	141+
Grid storage location	Month Analyzed
Scooe Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	·c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K3-4	NP												
	H34	NO												
	634	M)			K	10 )	8	D/w.whm	F	5/2	debris			
	F3-4	N			Pu		9/	Lomba	<i></i>	5/6	debris			
	E3-4	ND		·				1						
13	K4-1	ND			•			Thous	(0)	S/1.				
<i>y</i>	HC-1	ND						77	7					
	G14-1	NO						,						
	FU-1	W												
	C4-1	W					`							

Reservoirs Environmental, ine.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100(N)S
Voitage (KV)	100 KV_
Magnification	20KX 10KX
Grid opening area	0.011
Scale: 1L=	0.28 um
Scale: 10 ==	0.058 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

I THE MODERNO OF	DOMES CODE
Client :	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	950
Date received by lab	10/5/11
Lab Job Numben	221950
Lab Samole Number:	805795
	-

F-Factor Calculation (Indirect Preps Only):								
Fraction of primary litter used								
Total Resuspension Volume (ml)								
Volume Applied to Secondary filter (ml)			_					

Analyzed by	JB
Analysis date	10/6/11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	7
Counting rules (ISO, AHERA, ASTM)	A1+
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	WMth		Amphibole	·c	NAM	Sketch/Cornments	Sketch	Photo	EDS
A	612-4	ND						-						i
	F2-4	ND		,*.										
	EZ-4	ND			. · ·	Pm	s & a	Ownfant	5	1/2 4	bris			
	CZ-4	DN				Pars	Y / .	50% in h	LL.	Solo	ebris			
B	43-6	Ę.							R		oh h			,
	F3-6	ND						./	7	Q.		·		
	E3-6	C'W												
	C5-4	70					,							

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#### Reservoirs Environmental, Inc. TEM Asbestos Structura Count

Laboratory name:	REI
Instmment	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Fitter Area (mm2)	
QA Type	

Client ;	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	868
Date received by leb	10/5/11
Lab Job Number:	221950
Lab Sample Number:	805796

Lab Sample Number:	803790
F-Factor Calculation (Indirect Pra	aps Only):
Fraction of primary litter used	
Total Resuspension Volume (mi)	·
Volume Applied to secondary filter (mi)	

Analyzed by	JB
Analysie date	106/11
Method (D=Dtrect, l=Indirect, IA=Indirect, ashed)	7 5
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scooe Alignment	Date Analyzed

Grid	Grid Opening	Stracture	No. of Str	ructures	Dime	Dimensions Mentification		Mineral Class				1 = yes, blank = no		= no
	One opening	Туре	Primary	Total	Length	Width		Amphibole	٥.	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F4-1	MD			·									
	£4-1	ND			·	Pin	wA 70	Plaintact	3-5	%de	bris	* .		
	c4-1	CN				Prv	n 15 60	% inbut		1/1	<b>Y</b>			
	B4-1	ND					Ì	B	10	leku				
B	63-3	ND							/ /	7				
	F3-3	ND												
	E3-3	ND												
	C4-6	ND					,							
											_			
	·	-				·								

## Reservoirs Environmental, inc. TEII Asbestos Structura Corm!

Laboratory name:	REI
instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20KX IDKX
Grid opening area (mm2)	0.011
Scate: 1L =	0,28 um
Scale: ID=	0.056 um
Primary filler area (nun2)	385
Secondary Fitter Area (mm2)	
QA Type	······································

Cilent:	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	939
Data received by lab	10/5/11
Lab Job Number:	221950
Lab Sample Number:	805797

Analyzed by	J15
Analysis date	10/6/11
Method (D=Direct, I=Indirect, iAoIndirect, ashed)	5
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scooe Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Volume (mi)							
Volume Applied io secondary first (ml)							

Grid	Grid Opening	Structure	No. of Str	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	≈ no
	J. D Oponing	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	614-1	ND												
	F4-1	ND				Pu	04	90 hoi	be	n f	3.5h	deb	<i>ک</i> رنج	
	E4-1	M				20	5/3	70 /2 W	Lus	F	350/2	doh	n's	
	C4-1	1			/	7		Bant.	2/6/	1			,	
	B4-1	NO			•			7						
13	F4-6	ND			-									
	E4-6	NO												
	C4-6	ND											·	
														-
						·								

10/6/11

Month Analyzed

Date Analyzed

#### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
instaiment	JEOL 100(N)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filler area (nun2)	385
Secondary Filter Area (mm2)	
QA Type	

Cilent :	ROR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	939
Date received by leb	10/5/11
Lab Job Number	221950
Lab Sample Number	805798

Count	lirect, ashed)
(180,	AHERA, ASTM)
Grid s	torage location
Scope	Alignment

Analyzed by

F-Factor	Calculation	(Indiract	Preps	Only):
			$\neg$	
Fraction of	fortmery filter	used	- 1	

I second or building and	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of St	ructures	Dimensions		Identification	Mineral Class				1 = yes, blenk = no		
		Туре	Primary	Total	Length	Width	· ·	Amphibole	·c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K3-6	ND												
	H3-6	ND			Pa	25	A 70	1/ in hu	/	5%	debris			
	613-6	ND			Pa	D (	80	6. s but		5	debis			
	F3-6	ND												
B	63-4	M						Bank	10/0/					
	F3-4	ND	pel 1	•		L			17					
	E3-4	ND									·			
	c3-4	ND					·							
				· ·	ı	•								,

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed,  $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$ 

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{E(f. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000\text{cc}}$ 

Filter loading,  $s/mm^2 = \frac{\# Asbestos structures}{Area Analyzed (mm^2)}$ 

GO = TEM grid opening



October 7, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 222038-1 None Given

**Project Description:** 

Rocky Mtn. Power 3rd

West Sub Station

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer.

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222038-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222038-1

Ciient:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

Rocky Mtn. Power 3rd West Sub Station

Date Samples Received:

October 6, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 7, 2011

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID Number		Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-100411-N	EM	806562	0.0770	1168	ND	0.0043	BAS	BAS
3W-100411-E	EM	80656 <b>3</b>	0.0770	1162	· ND	0.0043	BAS	BAŞ
3W-100411-S	EM	806564	0.0880	1058	ND	0.0041	BAS	BAS
3W-100411-W	EM	806565	0.0770	115 <b>3</b>	.ND	0.0043	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm<sup>2</sup> = 0.011 Effective Filter Area = 385 sq mm

DATA QA

## REILAB RESELVOIRS Environmental, Inc. 8001 Legan St. Donver, CO'80216 · Ph; 303 964-1986 · Fax 303-477-4276 · Toll Free ;868 RESI-ENV

**RES 222038** 

	_	_		Pagor : 3 33-8 INVOICE TO: (1		ERENT	1		655						ONTAC	T in	IFOR	MATION:			
Company: (2)	FR Emiron	manulat		Согпралу:			<u></u>	Co	rtect:	De 120 .	Res	Lail	A				Cont		Ţ		
Address: 117	W 90005			Address:				Pin	ine:	<i>-</i>	مستدر	RELL	L.y				Phon		Fire Day	دنو	
S	end . Ut. 8	4070					···	Fer	li								Faic				
								Col	l'pager,	Ø)	541	-10	35				Cell	egen &21	828-52	219	
Prejeol Number	ne/br P.O. #:		~~~~~ <del>~~</del>					Fb	el Dit le	Delivera	ble Ernell	Addre	17:							<del></del> ,	
Project Descripti	an/Location: Cax log	Min Power 320 W	est Suk	Station																	·
ASBESTO	S LABORATOR	Y HOURS: Weekdays: Tam						REQU	EST	ED AN	IALY8	IIS				VA	UD	MATRIX C	ODES	LAB	NOTES:
PLM / PCM	TEM	RUSH (Same Day) X PRIORIT (Rush PCM = 2hr, TE		STANDARD												Alr:			Bulk = B Paint = P		
CHEMIST	Y LABORATOR	RY HOURS: Weekdaye: San	n - 8pm		7	[			1 1			1		ļ		Soli	8 8	V	Vipe • W		
Matal(s) / O	ust	RUSH 24 hr	3-6 Day		ן ן.	<u>.</u>			1 1						. 8	wab:	= 8W	F	• Food	1	
RCRA 8 / M	otals & Walling	RUSH 8 day	10 day	**Prier notification is required for RUSH	핕		1	E	Ιİ		Ş			_	Drink	ng Wi	Mer =	DW Waste	Water = WW	<u> </u>	
Furne Scan	/TCLP	NUON O UBY	_ ro day	turmerounds.**	3	* 8 + B		8					-11	13 B		. 7	(	) = Other			
Organica		24 hr 3 day						Metals Sc	1	11	Page 1		_	활동	**AS	TME	1782 8	pproved wipe	media only**		
		TORY HOURS: Weekdays:	9am - 6pm			2 2		₹	1 1		8		<b>≨</b>   5	8 2		T	T				
E.coli 0187	:H7, Collforms, 8.	<del></del>		3-6 Day	-   tg	SO-INC.		E	]		0		看图	s E	1						
Satmonolia,	Liatarie, E.coli, A	<b>LPC, Y&amp;M</b> 48 Hr.	3-5 Day	•	101			و ا			7 9	8 8		8 8	1				İ		
Meld		RUSH_	24 Hr4	a Hr_s Day_e Oajr		CTO-VEIC, CTO-VE	Respira	9 8	_	*	Count	5   b	9 8	<b>夏</b> 2	İ						
**Tumoround	times estabilah a lab	oratory priority, subject to laboratory		not guarantocd. Additional fee			2	₹3	島	丰富	၂၃၂ န	5 💠	<b>≱</b>  8	활	9				:		
		opply for allerhouse, weekends and	holidays.**	١	Short report,	\$ <b>2</b> 8	Total	- Analyte(s) TCLP, Welding Fum	2	축 현	7 8 7		4	۲   ق	Volume	و ا	2 8				
Special Inst	ructtona:				ਲੰ	Ment Micros.	10	85	ORGANICS - METH	Satmonella: +/- E.coil 0157:H7:	병병	į į	夏芝	Mont: ++. Identification, Quantification, SAMPLER'S INITIAL'S OR OTHER NOTES	> 5	Matrix Code	# Containers			EM Num	tier (Laboratory
						, EP   1		METALS RCRAS	3	S S	3 2 2	3	S	夏토	Sample V (L) / Area	Ě	5	Date Collected	Time Collected		se Only)
Cilent sal	nple ID numbe	er (Sample ID's mu	at be unique)		7		DUST	불운	ð	1	etCR08	IOLB	GY	\$	8 €	`   ₹	#	mm/dd/yy	librinm alp	1	
	100411-N)		and the same of th			X									1,16	A		1014In		801	e562
2 3W-1	00411-E (	Exclusion Zone	Samplin	ıq		<b></b>									11.16	2				}	63
3 3W-1	00411-W (		<	<i></i>											1.05	8			I	]	64
4 3W-1	004H-S)					8/									1.15	3 1	,	<b>*</b>			45
8					T		1		Π	$\top$											
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9							7														
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L	Contact	Phone Email Fax	Date	Time In	itials	Conta	d			Phona	Emali	Fax			Date			Tir	me	Initials	3

#### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

Α	=	Amosite	$\mathbf{F} =$	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
Т	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron

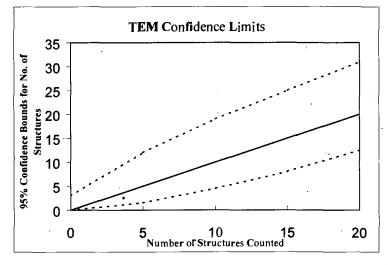
1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

## Reservoire Environmental, Inc. TEM Aspestoa Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N S
Voltage (ICV)	100 KV
Magnification	20KX 30KX
Grid opening area (mnı2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary fitter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1168
Date received by lab	10/6/11
Lab Job Number:	272038
Lab Sample Number:	806562

Analyzed by	-K
Analysis date	10/6/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rutes (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):  Fraction of primary filter used  Total Resuspension Volume (ml)		
Fraction of primary filter used		
Total Resuspension Volume (ml)		
Volume Applied to secondary filter (ml)		

Grid	Grid Opening	Structure	No. of Str	ructures	Dimensions		Identification	Mineral Class				1 = yes, blank = no		
J		Туре	Primary	Total	Length	Width	i de i di ji de de i i	Amphibole	С	NAM	Sketcti/Comments	Sketch	Photo	EDS
A	94-3	ND												
	24-6	ND					Prep A	- 90/ wact	3-5	1. L	Aris			
	85-1	ND					Prep B	+ 90/1 was						
	C5-1	ND						Jen p	Ynn	10/	6/11			
B	A4-6	No												
	F4-6	ND												
	EH-6	ND						·						
										,				

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N
Voltage (KV)	100 KV
Magnification	2010( )OKX
Grid opening area (mm2)	0.011
Scale: IL =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

TEM NOVOSIUS OF	actore Count
Client :	RIR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1162
Date received by lab	10/6/11
Lab Job Numben	222038
Lab Sample Number:	806563

Analyzed by	-K
Analysis date	10/6/11
Method (O=Direct, l=indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	A14
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (ml)						
Volume Applied to secondary filter (ml)	<b> </b>					

Grid	Grid Grid Opening		No. of Structures		Dimer	nsions	Identification	Mineral Class	Mineral Class			1 = yes, blank = no		= no
		Туре	Primary	Total	Length	Width		Amohibole	С_	NAM	Sketch/Comments	Sketch	Photo	EDS
A	23-4	NO												
	03-4	M					Prep	4 90/ W	Hacs	3-5	/ debns			
	133-4	M					Prep	BrA						
	A3-4	W						1	en,	In	10/6/4			
B	H4-1	M						Í						
	C14-1	29				·								
	FU-	M		-	. :									
									1	,	-			
,								·						

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Insburnent	JEOL 100 N
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L ≂	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Туре	į

R&R
A
1058
10/6/11
222038
806564

Analyzed by	-M
Analysis date	10/10/11
Method (D=Direct, i=Indlrect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	A14
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):								
Fraction of primary filter used								
Total Resuspension Volume (ml)								
Volume Applied to secondary filter (ml)								

Type ( p	Grid	Grid Opening	Structure			Dimensions		Identification	Mineral Class				1 = yes, blank = no		
H4-3 ND  G4-3 ND  (rep B nt  F4-3 ND  B G4-6 ND  E4-6 ND  C4-6 ND			Туре	Primory	Total	Length	WMth	i do i a i i i i i i i i i i i i i i i i i	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
H4-3 NO Prep A 90% was 3-5% dobris  (94-3 N) (rep B n)  F4-3 NO Fen from 10/10/16  B G14-6 NO F4-6 NO	A	K4-3	2									,			
#4-3 M Jan Kron 10/6/11  B G14-6 M F4		H4-3		THE SHAPE WELL				Prep	A 90%. 10	wac	- 3-	5/ dalor	is		
F4-3 M Jan Kron 10/6/11  B G14-6 ND  E4-6 ND  OM-6 ND		94-3	N)					Prep	BNH						
B (94-6 ND)  F4-6 ND  E4-6 ND  OH6 ND		<b>‡4-3</b>	W				,		Men	ho	~ 10	lefa			
EU-6 MO	B	94-6	100						7						
M-6 M		F4-6	10		·										
		EU-6	M												
		04-6	M												
											,				
												·			

C = Chrysotile

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
instrument	JEOL 100 N
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary fitter area (mm2)	385
Secondary Filter Araa (mm2)	·
QA Tyoe	

72W Asbestos Structure Count					
Client :	RAR				
Sample Type (A=Air, D=Dust):	A				
Air volume (L) or dust area (cm2)	1153				
Date received by lab	10/6/11				
Lab Job Number:	222038				
Lab Sample Number:	806365				
	80626				

Fraction of primary filler used	
Total Resuspensian Volume (ml)	
Volume Applied to Secondary filter (ml)	

Analyzed by	#5B	10/4/11
Analysis date	10/6/11	
Method (D=Direct, l≖indirect, IA=Indirect, ashed)	D	
Counting rules (ISO, AHERA, ASTM)	A14	
Grid storage location	Month Analyzed	
Scooe Alignment	Date Analyzed	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		identification	Mineral Class			1 = yes, blank = no			
			Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	45-1	DN					· 							
	1+5-1	DN		_										
	615-1	ND				Pmn	A 90	o he in hant	3-	5%	lebis			
	F5-1	70	74 (s.k.)			Pus	13~A							
3	H5-4	5				1	1/2	1 10/2/11			·			
	45-4	SV.		·			1	( / /						
	F5-4	ND					_							
										ı				
			36 m 12 m											

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{It.}}{\text{1000cc}}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



October 11, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 222194-1 None Given

**Project Description:** 

Rocky Mtn. Power 3rd W.

Substation

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222194-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222194-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

Rocky Mtn. Power 3rd W. Substation

Date Samples Received:

October 10, 2011

Analysis Type:

TEM, AHERA

Turnaround:

6 Hour

Date Samples Analyzed:

October 10, 2011

Client ID Number	Lab ID Number		Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
10-5-S	EM	8077 <b>15</b>	0.0770	1082	ND	0.0046	BAS	BAS	
10-5- <b>W</b>	EM	807716	0.0770	1082	ND	0.0046	BAS	BAS	
10-5-E	EM	807717	0.0770	1080	ND	0.0046	BAS	BAS	
10-5-N	EM	807718	0.0770	1080	ND	0.0046	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

**BAS = Below Analytical Sensitivity** 

Effective Filter Area = 385 sq mm

Average Grid Opening in mm<sup>2</sup> = 0.011

DATA QA

# RESERVOIRS ENVIRONMENTAL, INC. 5801 Logan St. Denvsr, CO 60216 · Ph; 303 964-1986 · Fax 303-477-4275 · Toll Free :866 RESI-ENV

Pager : 303-soe-2098

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	Sandy, Ut	an 84070							Fa											Fax:						
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### TEM Air Analytical Request Form

LAB:		rironmental, Inc.			Page_	of_	
	5801 Logan St		4				
	Denver, CO 8			Inspection Perform			
	Ph. 303-964-1	986	Date/Ti	me:		•	
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By su	bmitting asbestos	samples for ana	alysis and/or signing a purchase order and a	chain of custody, I	R&K Environn	nental agre	es that this
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### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

### Structure Types

			_	
Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	$\mathbf{B} =$	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
Т	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

### Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron

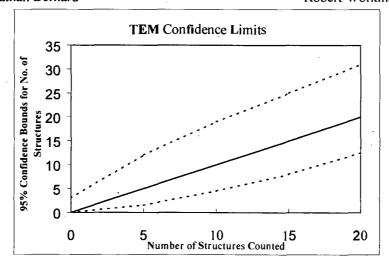
1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

### **TEM** Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

## Reservoirs Environmental, Inc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrument	JEOL 180 (N)S
Voltage (KV)	100 KV
Magnification	20KX TOKX
Grid opening area (nim2)	0.011
Scale: IL=	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

TEIN AGGESTED STREET				
Client:	Rock			
Samole Tyoe (A=Air, D=Dust):	A			
Air volume (L) or dust area (cm2)	1082			
Date received by lab	icholii			
Lab Job Number:	222194			
Lab Samole Number:	807715			
F-Factor Calculation (Indirect Preps Only):				

Fraction of primary filtar used

Total Resuspension Volume (ml)

Volume Applied to secondary lilter

2194	
7715	
:	

Analyzed by	JB
Analysia date	10/10/11
Metilod (D=Olrect, l=Indirect, IA=Indirect, ashed)	Ď
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Montlı Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	nctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	G.I.G. Openining	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	144-1	ND											•	
	64-1	MD				_							l 	<u></u>
	F4-1.	W				Par	A 7	10% into	nf		3-5% Jel	015		· 
	C4-1	MD				Pur	15 3	0.% nh	nf		3-5% det	nis		
B	K4-3	ND					1	B 10/	10/11				· 	
	1+4-3	W)					77	and J	/					ı L
	64.3	CW												
		······												
													,	

Reservoirs	Environmental, I	nc
<b>TEM Asbes</b>	tos Structure Co	un

Laboratory name:	REI
Instrument	JEOL 180 AVS
Voltage (KV)	100 KV
Magnification	20KX TOKX
Grid opening area (mrn2)	0.011
Scate: 1L =	0.26 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	Rok
Sample Type (A=Atr, D=Dust):	A
Air volume (L) or dust area (cm2)	1082
Date received by lab	ioliolii
Lab Job Number:	222194
Lab Sample Number:	80776
LEAD CAMPIC HUMBEL.	10-7-7-10

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary fitter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary Illiar (ml)	

Anahara dha	TA
Analyzed by	
Analysis date	10/10/1
Method (D=Direct, I=Indirect,	1 1
IA≍Indirect, ashetl)	_ <del> </del>
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	enoian	Identification	Mineral Class				1 = y	es, blank	.≖ no
		Туре	Primary	Total	Length	Width	TEG, Lambergon	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H6-1	W				_		,						
	616-1	M				Pas	o A	80% in 1	mit	(3)	- 5/2 de	bris		
	F6-1	W)				200	0/3	90 % int	ust	3	5% del	×2'5		
	E6-1	W	701			<i>"</i>								
B	E5-4	NO		·				4	Bu		10/10/11			
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	135-4	ND					·							
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JB

10101

AH **Month Analyzed** Date Analyzed

# Reservoirs Environmental, litc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrument	JEOL 180 NS
Voltage (KV)	100 KV
Magnification	20KX TOKX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 10 =	0.056 um
Primary fitter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Rok
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1080
Data received by lab	ioliotii
Lab Job Number:	222194
Lab Sample Number:	807717

A=Indirect, as counting rules	
ISO, AHERA	ASTM)
Grid storage to	ocation
Scooe Alignm	ent

Analyzed by

F-F	actor	Calca	<u>Jation</u>	(Indirect	<u>Preps</u>	Onty):	
Fran	Hon o	nrime	w filter	ueed			

Fraction of primary filter used	·
Total Resuspension Volumo (ml)	
Volume Applied to secondary litter (ml)	

Grid	Grid Opening	Struchire	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	One Opening	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F4-6	M									·			
, ,	F4-6	ND			P	2	A 80	Lo. short	(3	5- 5/	a debiis			
	46	W				nol	B 90	of nom	- 3	5	odebn35			
	(4-4	M			_	( )								
B	1.4-3	M)		•				18 10 l	6/4			,		·
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	K4-3	M												-
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			rulo.	1						-				

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

	· · · · · · · · · · · · · · · · · · ·
Laboratory name:	REI
Instrument	JEOL 180 AV S
Voltaga (KV)	100 KV
Magnification	20KX YOKX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

A A
A
080
dolu
22194
27718

Lab Samole Number:	1807718
F-Faetor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	10/10/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D'
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scooe Alkinment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dirne	nsions	Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibolo	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K4~3	ND												
	144-3	W				Pup	A 70	Lutant	5	-701	Abns			
	614-3	M			1	as l	87	& inhat	Ć	-7°	Volens			,
,	F4-3	W	77.25		-	<b>U</b> .			/					
3	63.6	W						4	B		oho hu			
	33-6	M									7			
	A3.6	W						/						
				i .		ť			-	<del> </del>			-	

### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

**B**undle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{\text{i000cc}}$ 

Filter loading,  $s/mm^2 = \frac{\# Asbestos structures}{Area Analyzed (mm^2)}$ 

GO = TEM grid opening



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Number of s	amples received: (Additio	nal samples shall be listed on	atta	ened lo	na foi	m.)	31.3355 (E.)	<u>iittiill</u>	2111(1)(1111	لللثلث	1111111	1::1:11	ettunio.	пришт.	1231191	mme	11-11-11-11-11-11-11-11	11-13 (114: **!!*! <b>!!!!</b>	111111111111111111111111111111111111111	uzandi sanangunu
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TPK# 86978473 218 1 10-2010\_version 1

PES 222199



### TEM Air Analytical Request Form

LAB:	5801	rvoirs Envir Logan St. ver, CO 802			Pageof  Visual Inspection Performed by:							
		303-964-198			ime:							
Turna	round	Time:		Rush (Same Da	y)	Non-Rush						
Locatio	on sam	ple was take	n <i>M</i>	POKKY ITTA I	POWER 300	1 WBT SU	B 574.77	אטי				
Street a	address	where sang	ole was taker	· · · · · · · · · · · · · · · · · · ·	Data of Callagia	10-6-11	,					
Sample	a by_		16 100	<u></u>	Date of Collection	n	···					
Report	t to be	sent to:		Billing	to be sent to:							
_			Romney									
			s above		ess:							
				City:		State:						
				Zip C	Code:							
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By sub	mittin	g asbestos sa	imples for an	alysis and/or signing	a chain of custody, I	R&R Environm	nental agre	es that this				
is the e	equival	lent of the su	bmission of	a purchase order and a	grees to pay for ser	vices provided	by the ana	lytical				
laborat	tory ac	cording to it	s posted stan	dard schedule of fees	for services.							
Submi	tted by	, CHEA	Se ince	) Da	te 10-6-1	Tim	<b>.</b>					
Receiv					te							
Receiv	red by	Analyst		Da	te	Time	e					
Return	Returned by Lab Date Time											

### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

### Structure Types

Α	=	Amosite	$\mathbf{F} = \mathbf{r}$	Fiber
An	=	Anthophyllite	$\mathbf{B} =$	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

### Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron

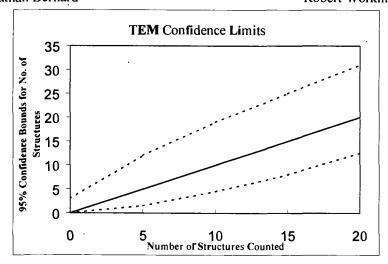
1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM** Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	668
Date received by lab	10/10/4
Lab Job Number	222199
Lab Sample Number:	807742

F-Factor Calculation (Indirect Preps O	niy):
Fraction of primary filter used	•
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	AH
Analysis date	10/10/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Att
Grid storace location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	One Opening	Туре	Primary	Total	Length	Width	identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H6-3	2												
<u></u>	666	2												
	66-3	7		Page	A:	60%	intact	- 3-5	Tu d	eba	5			
	Flo-6	2		Piop.	Br	Pag	A							
	F10-3	2		,	_	9								
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	B6-4	MD				M								
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# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20100 10HX
Grid opening area (mm2)	0.011
Scale: IL =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	ROR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	668
Date received by lab	10/10/4
Lab Job Number:	222199
Lab Sample Number.	8077412

F-Factor Calcutation (Indirect Pr	eps Only):
Fraction of primary filter used	·
Total Resuspension Volume (mi)	<i>'</i> .
Volume Applied to secondary filter (ml)	,

Analyzed by	SH
Analysis date	10/10/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Strncture	No. of St	ructures	Dime	nsions	identification	Mineral Class				1 = y	es, blank	≖ no
		Туре	Primary	Total	Length	Width	100.000	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	62-6	CN											·	·
, ,	G2-3	20			.4									
	F2-6	ND		Pront	- lec	% in	tact	3-5%	le 6	S				
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	E2-6	4								·				
B	63-3	ND												
	F36	N												
	F3-3	ND	*			X		5						
	F.3-6	ND			7	)								
	E3-3	M												
						.,								Rev 3-2009

### Reservoirs Environmentat, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instmment .	JEOL 100 NS
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (nurfi2)	385
Secondary Filter Area (mm2)	
QA Tyce	·

ROR
A
668
10/10/4
222199
807744

Analyzed by	AH
Analysis date	10/10/11
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	7 / 7
Counting rules (ISO, AHERA, ASTM)	Att
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):						
Flaction of primary filter used						
7otal Resuspension Volume (ml)						
Volume Applied to secondary filter (ml)						

Grid	Grid Opening	Structure	No. of St	mctures	Dime	nslons	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	c	NAM	Sketch/Comments	Sketch	Photo	EOS
A	C43	MD												
	B4-6	$\triangle \Delta$			.9				,					
,	B4-3	DV		Piec	A:	60%	ntace	3-5%	de	623				-
	C5-4	M		Per	B^-	80%	intac	3-5/	7 1	625				
	(5-1	ON		,										
B	F4-3	ND					1							
	E4-6	MO				8								
	E4-3	M												
	c4-6	ND												
	43	MD												

# Reservoirs Environmental, Inc. 7EM Aspestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 NS
Voltage (KV)	100 KV
Magnification	20KX IOKX
Grid opening area (mm2)	0.011
Scale: 1L=	0,28 ten
Scale: 1D =	0.056 um
Primary fitter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	·

TEM Advestis di uctule coult .					
Client :	ROR				
Sample Type (A=Air, D=Dust):	A				
Air volume (L) or dust area (cm2)	668				
Date received by lab	iololi				
Lab Job Number:	222199				
Lab Sample Number:	807745				
Lab Sample Number:	1 80175				

Analyzed by	AH
Analysis date	50/10/11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, ANERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

E-Easter Calculation	n (Indirect	Deone Onto
F-Factor Calculation	ın (ınairect	Preps Univ):

Fraction of primary filter used	
7otal Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Stmcture	No. of St	ructures	Dime	nsions	Identification	on Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	B5-1	CN												
	A5-4	AVA			4									
	F6-4	2	267 2 12	Pearl	t: le	0 %	ntact	3-5% d	eba	S				
	F6-1	20		Pier	BA	Pie	1							
	E10-4	25												
3	F6-4	4		·	-									
	Fle-1	M			(									
	E10-4	2		·		1								
	E6-	ND	The Paris of the P									ŀ		·
	(6-4	ND												
									<del></del>	<del></del>	<del></del>		1	Rev 8-2006

### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

### Equations Used for Calculations

Area Analyzed,  $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$ 

Concentration,  $s/cc = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{I}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{11}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



October 12, 2011

Laboratory Code:

RES

Subcontract Number:

NA.

Laboratory Report: Project # / P.O. #

RES 222296-1 None Given

Project Description:

Rocky Mtn. Power 3rd

West Sub Station

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

#### Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222296-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222296-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

Rocky Mtn. Power 3rd West Sub Station

Date Samples Received:

October 11, 2011

Analysis Type:

**TEM. AHERA** 

Turnaround:

24 Hour

Date Samples Analyzed:

October 12, 2011

Client ID Number	Lab ID Ni	umber	Area Analyzed	Air Volume Sampled	Number bf Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)_	
3W-100711-S	EM	808572	0.0990	878	ND	0.0044	BAS	BAS	
3W-100711-W	EM	80857 <b>3</b>	0.0990	874	ND	0.0044	BAS	BAS	
3W-100711-E	EM	808574	0.0990	87 <b>6</b>	ND	0.0044	BAS	BAS	
3W-100711-N	EM	808575	0.0990	87 <b>3</b>	. ND	0.0045	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

**BAS = Below Analytical Sensitivity** Average Grid Opening in mm<sup>2</sup> = 0.011 Effective Filter Area = 385 sq mm

DATA QA

Due	Date:_	10.12.11
Due	Time:_	1020 €

### Reservoirs Environmental, inc.

·		-				5801 Logan St. D	3171-808			303 🌃	64-18	88 • Fa	303-	477-42	75 - 1	al Fre	e :666	RESI-ENV								
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		RATORY	iOURS: Waokday							1	- 1	1				11	1	1 1 1			30# =	8		Mpe = W		
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RCRA 8 / Me		tding	DIEN S	day10 day		ar natillegtion is Idresi for RUSH	•	핕	Š			E			٤		ŧ	اچا	- li	Drinking	g Wat	er= [	Wast	Weiter o WW	/	
Fume Scan	TCLP					imeeminds.**		3	‡ <u>§</u>	}]		8			1			8 8	8 8		A STATE OF THE PARTY OF THE PAR		= Ottler			
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			RY HOURS: Wee			<del> </del>			. ESO.	1						2 8	뒝뷿	8 9 2	- 1							
E.coll 0187:				24 hr2 Day		Day		Long report,	7402, 50-Ind	OSHA	- 1	Ę	-				Queents	8 8	1		1 1	1		}		
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<u></u>		cps	ly lor afterhours, week	ands and tiolidays,"		<del> </del>		Short report,	AHERA. UMT. Miss	7400A, 7400B.	<b>1</b>	- Analyto(s) TCLP, Welding Fume,	2	8 6	7 3	4	1 H	++ or Quantification ++, Identification, Ou SINITIALS OR OTHER		동	يو	2				
Special Insti	uctions:						j		· 🕾	1 . 1	•	AB. T	ORGANICS - METH	Selmonella: +/- E.coli 0157:H7:	Listeria: +/-	E OBE	Colifornia: S.aureus:	Per St	- 1	Sample Volume (L) / Area	Matrix Code	# Contain	Date	Time	. l	i <b>mber</b> (Leborater) Use Only)
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NOTE: REI analysis as	will analjos i Indicates en	ncoming sampl Itais Chal <sub>l</sub> l of C	es sasaitv <u>gan jakkamatia.</u> Jalady shali collettula an s	rectived and will not b netylical services agree	e responsible Ment with pe	for errors or ornics syment terms of NE	sions in ca IT 30 days	Houdeti B, fellum	ons rear	uiling fr mply wi	rom th Bh pay	e ineco. Yment te	recy (	ay resu	a) deta It in a	n. By 41 1,5% r	gring ( (irtinon	illent/compe Interest su	ny repri	vitsinset	e agre	es thai	t submission	of the following 6	amples for n	equested .
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D	Conta <b>a</b>	Dure	Phone Imal Fa		C 12/11	Time (1:30)	Initia	alg	ြင္၀	ontact				Phone						Date			T	me	inii	als
	Contact		Phone Email Fa	x Date	· -T	Time	Initia	els 7	Co	ontact				Phone	En	nall F	ах			Date			T	lme	init	als

### Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

### Structure Types

A =	Amosite	F = Fiber
An =	Anthophyllite	B = Bundle
C =	Chrysotile	C = Cluster
Cr =	Crocidolite	M = Matrix
T =	Tremolite	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

### Sizing Conversion

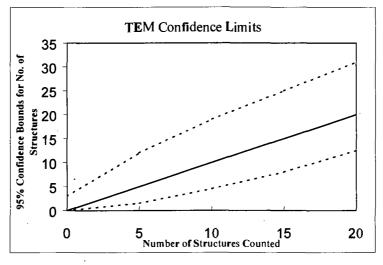
1 length unit = 5 mm on screen = 0.278 micron 1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

# Reservoirs Environmental, Inc. 7EM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	20KQ fOKX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primaty filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

R	R			
J	9			
8	78			
101	ln_			
27	22296			
808.5 72				
	10/11			

F-Factor Calculation (Indirect Preps Only):									
Fraction of primary filter used									
Total Resuspension Volume (ml)									
Volume Applied to secondary filter (m()									

Analyzed by	JB
Analysis date	10/12/11
Method (0=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	nuctures	Dime	nsions	Identification Mineral Class					1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	C NA		Sketch/Comments	Sketch	Photo	EDS
A	K6-1	ND												
	H6-1	ND				<u> </u>								ļ
	G16-1	ND				mp	A 80	of in ha		5-1	Oho debr.	-5		<del></del> -
	F6-1	2				Pup	60	of into	4	5-10	· Lebris			
	05-6	M						13	0/12	1				
B	65-3	ND						7	7 /					
	F5-3	ND							,			·		
	ES-3	N												
	65-3	ND.												
									*	·	· · · · · · · · · · · · · · · · · · ·	<del></del>		Rev 3-2009

Reservoirs Envtronmental, Inc. TEM Asbestos Structures Count

Laboratory name:	REI
instrument	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
OA Type	

TEM MODOSCO UM	INCHING COUNT
Client:	RTR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	874
Date received by lab	10/11/11
Lab Job Number:	222296
Lab Sample Number:	808573

JB
10/12/11
D
AH
Month Analyzed
Date Analyzed

F-Factor Calculation (Indirect P	reps Only):
Fraction of primary filter used	·
Total Resuspension Volume (ml)	
Volume Applied to secondary fitter	

Grid	Grid Opening	Structure			Dimensions		ures Dimensions		Identification	Mineral Class			·	1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	- Solitinoguoli	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS		
A	64-1	M)			,			· .								
	F4-1	ΜΔ				Pn	ρA	60%.	In tou	<i>f</i>	5-7%	lebc.	<u> </u>			
	F5-3	ND				2	26	60%	nh	+	5-7 %	deb	<u> </u>			
	65-3	NID								1						
·	C5-3	W							4	13	1 soliz lu					
B	K3-3	ND														
	H3-3	M)											·			
· ·	n4-6	ND														
	H4-6	M					:									

## Receivoirs Environmental, Inc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 (1) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening araa (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

			_
Client :	Rm	R	
Sample Type (A=Air, D=Dust):	Α	!	
Air volume (L) or dust area (cm2)	8	76	
Date received by lab	10/11	Ŋ	_
Lab Job Number:	22	2296	,
Lab Sample Numben	808	5 74	
Lab Job Number:	22	2290	

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resusperieion Volume (ml)						
Volume Applied to secondary fliter (ml)						

Analyzed by	JB
Analysis date	10/12/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Pmp & 80% intent 10-15% debris
3 90 % intent 10-15% belows

Grid	Grid Opening	Strncture	No. of Structures		ructures Dimensions		Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	- Continue Continue	Amphibole	С	NAM	  Sketch/Comments	Sketch	Photo	EDS
A	K3-1	ND			,			-						
	H3-1	W				Par	5_A	80%	nh	vt	10-15 6	ehr:		
	H4-3	(N)			ì									
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B	K5-3	M						// 7	7	7				
	H5-3	W)						,			_			
	65-3	W)	Marine S											
	F5-3	M												
											<u></u>			Rev 3-2009

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL too (1) S
Voltage (KV)	100 KV
Magnification	20KX iOKX
Grid opening area (mm2)	0.011
Scale: IL=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

actare count
RTR
A
873
10/11/11
222296
808.5 95

Fraction of primary fitter used	
Total Resuspension Volume (ml)	
Volume Applied to econdary filter	

Analyzed by	JB
Analysis date	10 12 11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Pap A 70% hout 5-10% debre B 80% what 5-10% debris

Grid	Grkl Opening	Strncture Type	No. of Structures		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
			Primary	Total	Length	Width	Identification	Amphibole	C.	NAM	Sketch/Comments_	Sketch	Photo	EDS
A	195-1	ND			,		•				,			
	F5-1	ND												
	E5-1										•			
	Elo-4	_												
	66-4	(N												
B	K4-3	M									·			
·	144-3	•				·		:	·			·		
	64-3		T.		,				/	1				
	F4-3	M	ALKE TO SAN					as by	3	1 vel	2/11			
							A	7	1000	$l^{\prime\prime}$	<del>/'</del>			

### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

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micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### Equations Used for Calculations

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration, s/cc =  $\frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading,  $s/mm^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2)}$ 

GO = TEM grid opening